REMARKS

In the Office Action, the Examiner rejected claims 1-30. By the present response, claim 3 is amended. Upon entry of this amendment, claims 1-30 will remain pending in the present application and are believed to be in condition for allowance. In view of the following remarks, Applicants respectfully request reconsideration and allowance of all pending claims.

Preliminary Remarks

As a preliminary matter, Applicants note that throughout the prosecution of the present patent application, the Examiner has *consistently* failed to set forth a rejection that conforms to the standards set forth under 37 C.F.R. § 1.104 and M.P.E.P. § 707.07. In many instances, the Examiner has superficially attempted to reject each of the independent claims in the present application, namely claims 1, 15, 22, 25, and 27, by merely reproducing the text of independent claim 1 and appending vague citations to figures and paragraphs and/or column and line numbers of a cited reference. However, other than these vague citations, the Examiner has provided <u>absolutely no explanation whatsoever</u> as to what precise elements disclosed in a cited reference are believed to correspond to the elements recited in the independent claims. Applicants respectfully assert that this continuing practice by the Examiner serves only to frustrate and hinder the prosecution of this present application.

Before addressing the present rejections, a brief summary of the prosecution history of the present application is believed to be helpful in illustrating the point. For instance, beginning with the initial Office Action mailed 5/5/2005, the Examiner generally stated that each of independent claims 1, 15, 22, 25, and 27 was anticipated under 35 U.S.C. § 102(b) by Morita, U.S. Patent No. 5,453,749 ("Morita"). *See* Office Action mailed 5/5/2005, page 2. Specifically, the Examiner stated:

> With regards to Claim 1, 12, 15, 17, 22, 25, and 27, Morita (5,453,749) teaches a processor-based method comprising:

> receiving a data stream (Column 3, Line 27) comprising a plurality of temporally ordered data points (Summary of Invention, Column 3, Lines 27-30);
>
> generating a plurality of sequences (Fig. 3) from a first portion of the data stream (Fig.3, Column 5, Lines 19-29, 43-54); and
>
> training a detector (Column 5, Lines 19-21) by determining a value for a sensitivity parameter (Fig. 3, Step SE) using the plurality of sequences (Fig. 3, Column 5, Lines 19-21,43-54).

Office Action mailed 5/5/2005, page 2.

As noted above, this rejection is merely a quotation of the recitations set forth in independent claim 1 with the addition of vague citations to passages and figures of Morita. Indeed, the Examiner only specifically mentioned the elements of independent claim 1, and failed entirely to address the specific elements of any of the other independent claims, which are not included in claim 1. Further, other than providing these vague citations, the Examiner <u>failed to specifically point out or provide <i>any</i> explanation</u> as to the precise teachings in Morita that the Examiner believes corresponds to <i>each</i> of the elements recited by independent claims 1, 15, 22, 25, and 27. Despite the insufficiency of the rejection, Applicants responded by pointing out several deficiencies with regard to Morita based on Applicants' review of the reference. <i>See, generally,</i> Response to Office Action mailed 5/5/2005. Thereafter, the Examiner maintained the rejections based upon Morita in a Final Office Action mailed 9/21/2005, but again provided <u>little to no explanation</u> other than merely re-quoting his previous rejections. Following the Final Office Action, Applicants filed a Pre-Appeal Brief Request for Review in which the Panel chose to re-open prosecution. <i>See</i> Panel Decision mailed 2/13/2006.

Following the Panel decision, the Examiner issued another non-final Office Action mailed 4/4/2006. In this Office Action, the Examiner withdrew the rejections based upon Morita, but issued a new ground of rejection under 35 U.S.C. § 102(e) with regard to independent claims 1, 15, 22, 25, and 27 based upon a new reference, Desai, U.S. Patent Application Pub. No. 2003/0171900 A1 ("Desai"). However, in a manner similar to the previous

Office Actions, the Examiner merely quoted independent claim 1 with the addition of vague

citations to figures and passages in Desai. For example, the Examiner stated in the Office Action

mailed 4/4/2006:

> With regards to Claim 1, 12, 15, 17, 22, 25, and 27 Desai teaches a
> processor-based method comprising:
>
> receiving a data stream comprising a plurality of temporally ordered data
> points (Page 1, Paragraph 10);
>
> generating a plurality of sequences from a first portion of the data stream
> (Page 1, Paragraph 10); and
>
> training a detector by determining a value for a sensitivity parameter
> ("threshold") using the plurality of sequences (Page 1-2, Paragraph 12, Page 3,
> Paragraph 38-40).
>
> Office Action mailed 4/4/2006, page 3.

Again, the Examiner only made reference to the elements of independent claim 1, and other than

vague references to various passages and figures of Desai, the Examiner provided <u>no explanation</u>

<u>or reasoning</u> as to the precise elements in Desai that the Examiner intended to correlate to

elements recited by independent claims 1, 15, 22, 25, and 27, thus effectively denying Applicants

a fair opportunity to respond to the rejection. However, based on Applicants' best understanding

as to the teachings set forth in Desai, and notwithstanding the insufficiency of the Examiner's

rejection, several deficiencies were noted in a Response to the Office Action mailed 4/4/2006.

Following Applicants' Response to the Office Action mailed 4/4/2006, the Examiner

issued yet another non-final Office Action on 8/18/2006, in which the Examiner appeared to

indicate that the only outstanding rejections were with regard to claims 25 and 26 under 35

U.S.C. § 101 as allegedly failing to recite statutory subject matter. *See* Office Action mailed

8/18/2006, page 2. In the rejection, the Examiner suggested language that the Examiner

indicated would place the application in condition for allowance if Applicants amended claims

25 and 26 accordingly. Although Applicants did not necessarily agree with the Examiner's

rejections, Applicants amended claims 25 and 26 in accordance with the language suggested by

the Examiner in order to expedite the allowance of the present application. *See* Response to the

Office Action mailed 8/18/2006, pages 6-7.

Thereafter, another non-final Office Action was issued by the Examiner and mailed on

12/18/2007, in which the Examiner set forth a new ground of rejection with regard to

independent claims 1, 15, 22, 25, and 27 under 35 U.S.C. § 102(b) as being anticipated by Wilks

et al., U.S. Patent No. 6,107,919 ("Wilks").[1] In this Office Action, the Examiner stated:

> With regards to Claim 1, 12, 15, 17, 22, 25, and 27 Wilks teaches a
> processor-based method comprising:
>
> receiving a data stream comprising a plurality of temporally ordered data
> points (Figure 1A, B, Abstract, Column 7, Lines 17-Column 8, Line 15);
>
> generating a plurality of sequences from a first portion
> of the data stream (Figure 1A, B, Abstract, Column 7, Lines 17-Column 8,
> Line 15); and
>
> training a detector by determining a value for a sensitivity parameter using
> the plurality of sequences (Figure 1A, B, Abstract, Column 7, Lines 17-Column 8,
> Line 15).
>
> Office Action mailed 12/18/2007, pages 2-3.

As in each of the previous Office Actions, the Examiner simply reproduced the text of

independent claim 1 while incorporating additional citations to figures and passages from Wilks.

However, not only did the Examiner fail to discuss any elements other than those found in claim

1, the Examiner failed to articulate any explanation that would allow Applicants to appreciate the

nature of the rejection, such as which particular elements illustrated in the cited figures and

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[1] The Office Action mailed 12/18/2007 is essentially a re-mailing of an Office Action originally mailed on
12/28/2006, but was not received by Applicants, as generally summarized in a Petition to Withdraw Holding of
Abandonment under 37 C.F.R. § 1.181(a) submitted on 8/9/2007. Due to the evidence provided by Applicants, the
Patent Office withdrew the holding of abandonment.

passages are believed to specifically correspond to the elements recited by independent claim 1. Nonetheless, Applicants made several assumptions in attempting to guess at what the Examiner intended to cite, and based on Applicants' own review of Wilks and based on the part-to-part correlations that Applicants believe the Examiner may have intended, several deficiencies were noted in a Response submitted by the Applicants on 3/13/2008.

In view of the deficiencies pointed out in the Response submitted on 3/13/2008, the Examiner withdrew the Section 102 rejections based on Wilks and, in the present non-final Office Action mailed 6/19/2008, cited a new reference, Boerner, U.S. Patent Application Pub. No. 2003/0009399 A1 ("Boerner") as allegedly anticipating each the independent claims 1, 15, 22, 25, and 27 under 35 U.S.C. § 102(b). *See* Office Action, page 3. As will be discussed in further detail below, the Examiner rejected these claims in the present Office Action in precisely the same superficial manner discussed above with regard to the previous Office Actions. That is, in rejecting *each* of independent claims 1, 15, 22, 25, and 27, the Examiner merely quoted independent claim 1 while adding ambiguous citations to various figure and passages of Boerner. However, it does not appear that the Examiner has provided any explanation that would enable Applicants to clearly deduce as to what specific elements in Boerner, if any, that the Examiner believes corresponds to the specific elements recited by independent claim 1.

With the above points in mind, Applicants remind the Examiner that superficial or cursory examinations, such as the Section 102 rejections in the present Office Action (as well as those in the previous Office Actions summarized above) are improper for failing to conform to the provisions set forth in 37 C.F.R. §1.104(c)(2), which states:

> When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be *designated* as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim *specified*.

> *See also* M.P.E.P. §707.07. (Emphasis added).

Section 706 of the M.P.E.P. further states that: "[t]he goal of examination is to <u>clearly articulate</u> <u>any rejection</u> early in the prosecution process so that the Applicant has the opportunity to provide evidence of patentability and otherwise reply completely at the earliest opportunity." M.P.E.P. § 706. Thus, although the Examiner has attempted, minimally, to provide Applicants with citations from Boerner, Applicants submit that the present rejections fall <u>far short</u> of the level of analysis required under 37 C.F.R. § 1.104 and M.P.E.P. § 707.07, as discussed above. For instance, many of the citations provided by the Examiner refer to an entire paragraph or even multiple paragraphs. Further, with regard to the Examiner's use of figures, other than merely citing a corresponding figure number, the Examiner provided absolutely <u>no indication</u> as to which elements or reference numbers in the cited figure are believed to correspond to a recited element from any of the independent claims. Therefore, absent any further explanation, Applicants submit that the present rejections are improper, as they fail to point out with *specificity* where in the cited reference the Examiner believes the recited subject matter is disclosed. As such, Applicants submit that the Examiner has *not* met the legal burden of showing that the cited reference discloses the *identical* invention in <u>as *complete detail* as</u> <u>contained in the claims</u>. *See Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Additionally, Applicants note that each of the additional independent claims 15, 22, 25 and 27 recite respective features <u>not present in independent claim 1</u> and which provide further distinguishing features with regard to those respective claims. For instance, in addition to "training a detector," as recited in claim 1, independent claim 15 further recites "testing a second portion of the data stream using the trained detector." Independent claim 22 recites both "a trainer" and "a detector." Independent claim 25 recites a computer-readable medium encoded with computer instructions for generating sequences, determining a sensitivity parameter and training a detector to detect an event. Independent claim 27 recites a system comprising means for performing the steps of claim 25. To the extent that these additional features are <u>not</u> recited by independent claim 1, Applicants submit these additionally recited elements were <u>not</u> <u>considered</u> *at all* by the Examiner in the present office action or in any of the previous rejections.

Applicants respectfully assert that the glaring deficiencies of the Examiner's rejections have unnecessarily frustrated and prolonged the prosecution of the present application. Particularly, given the Examiner's continuing pattern of issuing vague rejections which fail to properly articulate or identify part-to-part correlations as to how the cited references correspond to the claimed elements, and given the fact that the Examiner only discusses the elements of independent claim 1, Applicants have been denied a fair opportunity to respond and instead have been forced to guess and speculate as to how the Examiner is interpreting the references in each rejection in order to make a good faith effort in responding to each of these rejections. Further, it should be noted that during the nearly five years of prosecution that has commenced since the filing of the present application on 10/31/2003, the only amendments previously submitted by Applicants were to overcome a Section 101 rejection set forth in the Office Action mailed 8/18/2006, in order to place the application in condition for allowance, as discussed above. In other words, during the pendency of the present application, Applicants have been able to overcome *each* of the Examiner's previous Section 102 rejections of independent claims 1, 15, 22, 25, and 27 without amending *any* of these claims, thus evidencing the cursory and superficial nature of the Examiner's examinations.

As will be discussed in detail below, Applicants strongly believe that all pending claims are allowable over Boerner. Accordingly, if the Examiner chooses to maintain the current rejections in a future communication, Applicants respectfully request that the Examiner provide a rejection that clearly articulates and fully explains how the Examiner believes Boerner anticipates the recited subject matter. Further, it should be noted that if the Examiner chooses to again provide another cursory rejection based on either Boerner or a new reference, Applicants intend to request an interview with both the Examiner and the Examiner's supervisor in order to discuss the unnecessarily protracted prosecution of this case based on the superficial nature and glaring deficiencies of every previous Office Action and to reach a resolution such that the prosecution of the present application, which has already been unnecessarily delayed, may move forward.

With the foregoing points in mind, Applicants will now address the deficiencies of the
Examiner's present rejections based on Boerner below.

Claim Rejections Under 35 U.S.C. § 102

In the Office Action, the Examiner rejected claims 1-12, 14-23, 25-30 under 35 U.S.C. §
102(b) as being anticipated by Boerner. Specifically, with regard to independent claims 1, 15,
22, 25, and 27, the Examiner stated:

> With regards to Claim 1, 12, 15, 17, 22, 25, and 27 Boerner teaches a
> processor-based method comprising:
>
> receiving a data stream comprising a plurality of temporally ordered data
> points (Figure 1, Paragraph 34);
>
> generating a plurality of sequences from a first portion of the data stream
> (Figure 1, Paragraph 34-36); and
>
> training a detector by determining a value for a sensitivity parameter using
> the plurality of sequences (Figure 1, Paragraph 18).
>
> Office Action, page 3.

Applicants respectfully traverse these rejections. Indeed, as discussed above, the nature of the
present rejection is similar to each of the Examiner's previous rejections in that the Examiner has
done little more than merely restate the subject matter recited by independent claim 1 while
inserting vague citations. However, other than these vague citations, the Examiner has provided
absolutely no explanation as to what elements disclosed in the reference are believed to
correspond to the recited elements in not only independent claim 1, but also independent claims
15, 22, 25, and 27 which, as noted above, recite additional elements not found in claim 1.

Legal Precedent

Anticipation under Section 102 can be found only if a single reference shows exactly
what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir.

1985). For a prior art reference to anticipate under Section 102, every element of the claimed invention must be identically shown in a single reference. *In re Bond*, 910 F.2d 831, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). That is, the prior art reference must show the *identical invention "in as complete detail as contained in the ... claim"* to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989). (Emphasis added). Thus, for anticipation, the cited reference must not only disclose all of the recited features but must also disclose the *part-to-part relationships* between these features. *See Lindermann Maschinenfabrik GMBH v. American Hoist & Derrick*, 221 U.S.P.Q. 481, 486 (Fed. Cir.1984). Accordingly, Applicants need only point to a single element or claimed relationship not found in the cited reference to demonstrate that the cited reference fails to anticipate the claimed subject matter.

Brief Summary of Embodiments of the Invention

Because it appears that the Examiner has failed to fully appreciate the techniques set forth in the present application, Applicants have provided the Examiner with a brief summary of disclosed embodiments. Generally, the present application is directed to a data monitoring system that may be employed to monitor various types of measured data. *See* Application, paragraph 20. The data monitoring system 10 may monitor a data stream 12 from any one of a number of data producing systems such as computer-related systems, disk drives, web servers, call centers, traffic systems, car engines, patients, stock market, or citation indices, for example. *See id.* The data stream 12 may generally include a sequence of temporally ordered data values. *See id.* at paragraph 21. In accordance with embodiments of the present invention, the data stream 12 is partitioned into a training window 16 and a testing window 18. *See id.* at paragraph 28. The training window 16 is defined as a contiguous portion of the data stream 12 that is used to train a detector 22 configured to detect something notable or interesting about the data stream 12, such as a change. *See id.* at paragraph 29. The trainer 20 uses the data in the training window 16 to generate a number of sequences 24 and uses the sequences 24 to determine an optimal value for a sensitivity parameter 26 to be used to parameterize the detector 22. *See id.* The sensitivity parameter 26 might be a threshold, for instance, establishing a level that is used to

trigger an alarm 28 if the monitored data reaches the value of the sensitivity parameter 26. *See id.* The value established for the sensitivity parameter 26 is then delivered to the detector 22 such that the detector 22 can use the sensitivity parameter 26 to determine whether the data in the testing window 18 exhibits the type of behavior that the detector 22 should detect. *See id.* at paragraph 30. By establishing a value for the sensitivity parameter 26 and setting the detector 22 to detect changes correlative to the sensitivity parameter 26, the detector is "trained." *See id.*

Once trained by determining a value for a sensitivity parameter 26 using the sequences 24 generated from the data training window 16, the detector 22 monitors the data contained within the testing window 18 to determine whether the data in the testing window 18 contains the sort of event or exemplify the sort of property the detector 22 is designed to detect. *See id.* at paragraph 33. As can be appreciated, the detector 22 is configured to detect "something" in the data stream 12. *See id.* at paragraph 34. That is to say, the detector 22 is configured to monitor the data stream 12 to detect something of interest, such as the occurrence or non-occurrence of a notable event or the implication that the data producing system 14 is in a state of interest. *See id.* Most commonly, the detector 22 will be configured to detect that a salient change has occurred in the data stream 12 – either that a salient change occurred within the testing window 18 or that the data contained in the testing window 18 is saliently different from the data contained in the training window 16. *See id.*

In summary, embodiments of the present system are directed to a system configured to receive a data stream. The system includes a trainer which samples a first portion of the data stream (e.g. in a "training window") to train the system to detect events, such as changes, in a second portion of the data stream (e.g. in a "testing window"). That is, the present system uses a *first portion* of the data stream to train itself to detect something in a *second portion* of the data stream.

Accordingly, independent claim 1 recites a method comprising "receiving a data stream comprising a plurality of temporally ordered data points," "generating a plurality of sequences

from a first portion of the data stream," and "training a detector by determining a value for a sensitivity parameter using the plurality of sequences." Independent claim 15 recites a method comprising "training a detector using a plurality of sequences generated from a first portion of a data stream, wherein the detector is configured to detect an interesting event in the data stream," and "testing a second portion of the data stream using the trained detector." Independent claim 22 recites a system comprising "a trainer configured to generate a plurality of sequences from a first portion of a data stream and further configured to determine one or more sensitivity parameters based on the sequences," and "a detector configured to detect an interesting event in the data stream using the one or more sensitivity parameters." Independent claim 25 recites a computer-readable medium encoded with computer instructions for "generating a plurality of sequences from a first portion of a data stream," "determining a sensitivity parameter using the plurality of sequences," and "training a detector to detect an interesting event in the data stream using the sensitivity parameter." Independent claim 27 recites a system comprising "means for generating a plurality of sequences from a first portion of a data stream," "means for determining a sensitivity parameter based on the plurality of sequences," and "means for detecting an interesting event in a second portion of the data stream using the sensitivity parameter."

Deficiencies of the Rejections with Regard to Independent Claims 1, 15, 22, 25, and 27

As discussed in the preliminary remarks section above, the Examiner's rejection of independent claims 1, 15, 22, 25, and 27 merely quotes the subject matter recited by independent claim 1 and suggest that all the elements recited by independent claim 1 are disclosed by Figure 1 and paragraphs 18 and 34-36 of Boerner. However, other than citing to this figure and the brief passages, the Examiner has provided absolutely no explanation or reasoning as to where in the cited figures and passages the Examiner believes the recited subject matter is disclosed. Accordingly, Applicants are unable to ascertain and fully appreciate the Examiner's rejections.

As set forth below, Applicants have responded to the Examiner's rejection with specific regard to claim 1. However, to the extent that certain features of independent claims 15, 22, 25 and 27 are *also* recited in claim 1, Applicants traverse the Examiner's rejection of those claims

for reasons set forth below with regard to the rejection of independent claim 1. Further, as discussed above, certain additional distinguishing features recited in each of the other independent claims (e.g., claims 15, 22, 25, and 27) are *not* recited by independent claim 1. For instance, in addition to "training a detector," as recited by independent claim 1, independent claim 15 further recites "testing a second portion of the data stream using the trained detector." Independent claim 22 recites both "a trainer" and "a detector." Independent claim 25 recites a computer-readable medium encoded with computer instructions for generating sequences, determining a sensitivity parameter and training a detector to detect an event. Independent claim 27 recites a system comprising means for performing the steps of claim 25. Because the Examiner has *only* specifically addressed the recitations set forth in independent claim 1, Applicants submit that the above-discussed additional elements of independent claims 15, 22, 25 and 27 were not considered by the Examiner in the present rejection. Therefore, if the Examiner chooses to maintain the current rejections in a future communication, Applicants request that the Examiner provide a more detailed summary of those features of the recited claims and direct Applicants to the allegedly similar features disclosed in the cited reference with *sufficient specificity* to allow Applicants a fair opportunity to appropriately respond. Notwithstanding this request, Applicants respectfully submit that Boerner does not disclose each of the elements recited in any of the independent claims.

      1.   **Boerner fails to teach or suggest generating a *plurality of sequences* from a first portion of a data stream, as recited by independent claims 1, 15, 22, 25, and 27.**

Each of the presently pending independent claims generally recites generating a <u>plurality of sequences</u> from a first portion of a data stream comprising temporally ordered data points. For example, as noted above, independent claim 1 recites "receiving a data stream comprising … temporally ordered data points" and "generating a *plurality* of sequences from a first portion of the data stream." (Emphasis added). Independent claim 15 recites "training a detector using a *plurality of sequences* generated from a first portion of a data stream." (Emphasis added). Independent claim 22 recites "a trainer configured to generate a *plurality of sequences* from a

first portion of a data stream." (Emphasis added). Further, independent claim 25 recites computer instructions for "generating a *plurality of sequences* from a first portion of a data stream," and independent claim 27 recites a system having "means for generating a *plurality* of sequences from a first portion of a data stream." (Emphasis added).

These above-recited features may be further understood with reference to various figures in the present application. For example, referring to Fig. 1, a trainer 20 is described as using a first portion of a data stream (e.g., the training window 16) to generate a plurality of sequences 24, wherein the plurality of sequences 24 may be used to determine an optimal value for a sensitivity parameter 26 to be used to parameterize a detector 22. *See* Application, paragraph 29, Fig. 1. The plurality of sequences 24 is illustrated in further detail in Fig. 3, which shows that the first portion (e.g., training window 16) of the data stream may be used to generate the sequences SEQ.1, SEQ.2, SEQ.3, and SEQ. 4 (e.g., 46). *See id.* at paragraphs 43-44, Fig. 3. Next, a score is generated for *each* of the plurality of sequences (e.g., 50) and, based on these scores, a sensitivity parameter may be determined. Thus, each of the presently pending independent claims clearly requires that <u>more than one sequence</u> (e.g., a plurality) is generated from a first portion of a data stream.

Applicants respectfully submit that Boerner fails to teach or suggest this feature. In setting forth the present rejection, the Examiner stated that the generation of a plurality of sequences is disclosed by paragraphs 34-36 of Boerner. *See* Office Action, page 3. These paragraphs state, in full:

> [0034] In this embodiment, a plurality of time series data sets is analyzed in order
> to identify one or more data sets for further analysis. Referring now to FIG. 1,
> which is a flowchart of the major analysis steps, in step 100 each of the data sets
> is analyzed to determine if the set is strongly trending. For each set, the last M_1
> data elements are extracted from the time series, and a line is fit through the points
> using multiple regression. In this example, M_1 is selected to be about 30 data
> points, or approximately 1.5 months of data. The normalized slopes and
> correlation coefficients are recorded. Upon such analysis of each of the data sets,
> a data set is selected for further analysis. When identifying financial instruments

to trade, a time series that has a large increase or decrease in normalized slope
with a correspondingly large absolute value of the correlation coefficient would be
a likely candidate for subsequent processing. Time series data sets that have a
small slope would generally be avoided.

[0035] Referring now to FIG. 2, which is a more detailed flowchart of the data set
selection steps, the initial search is performed through the following steps for each
time series data set i:

[0036] In step 110, each time series data set, $y_{1,j}$, j=1, N_1, where N_1 is the number
of elements in time series, is loaded into the processor. Note that a mathematical
transform of a time series is also a time series (i.e. $y_{i,j}^n = \ln(y_{i,j})$, j=1, N_i is also
considered to be a time series).

Boerner, paragraphs 34-36.

After carefully reviewing these cited passages, Applicants are unable to locate any teaching, in
either the cited passages or elsewhere, indicating that a *plurality of sequences* is generated from a
first portion of a data stream.

As noted above, the passages cited by the Examiner appear to disclose a technique for
analyzing a plurality of "time series data sets" in order to identify a particular data set to be
further analyzed. In particular, Boerner discloses that one or more regression techniques may be
applied to the last 30 data points (e.g., M_1 points) from each time series data set, and that a slope
corresponding to a fitted line may be determined. Thereafter, based on the slope value calculated
for each time series data, a particular data set may be selected for further analysis. For instance,
Boerner discloses that slope values indicating a large increase or decrease in normalized slope
would be an ideal candidate for further analysis. Because the Examiner has failed to provide any
explanation as to how he has interpreted Boerner in view of the presently pending claims,
Applicants have reached two possible interpretations that the Applicants believe the Examiner
may have intended.

First, Applicants note that the Examiner may have intended for one of the time series data
sets disclosed in Boerner to constitute the recited "data stream." Under this interpretation, the

Examiner would be required to demonstrate that Boerner discloses that a *plurality of sequences* is generated from a time series data set. Further, based on this interpretation, it would appear that the last 30 data points from the time series data set would correspond to the recited "first portion" of the data stream from which a plurality of sequences is to be generated. However, even assuming that the correlation of the time series data set to the recited "data stream" and the correlation of the last 30 data points to the "first portion" of the data stream is proper, based on the teachings summarized above, it does not appear that Boerner discloses the generation of a plurality of sequences using the last 30 data points. In stark contrast, Boerner, as noted above, merely calculates a slope for the last 30 data points based upon a fitted line determined by a regression technique. Applicants respectfully submit that one skilled in the art would not reasonably correlate a regression fit-line or a slope of the fit-line to a "sequence," much less a *plurality of sequences*, as recited by each of the present independent claims. Thus, it does not appear that the Examiner has established a *prima facie* case of anticipation with regard to independent claims 1, 15, 22, 25, and 27 under this first possible interpretation.

Under a second hypothetical interpretation, Applicants note that the Examiner may have attempted to analogize the *entire* time series data set as being a "first portion" of a data stream. As an initial note, Applicants believe that the plain meaning of the term "portion" clearly implies a portion that is less than a whole, and thus such an interpretation would be improper. However, even assuming for the sake or argument that such an interpretation has merit, it still does not appear that Boerner discloses generating a plurality of sequences from a single time series data set. For instance, assuming that the last 30 data points which are extracted and used to determine the slope value of a regression generated fit-line, it appears that these 30 data points would only constitute a *single sequence*. There does not appear to be any indication in the reference that any additional sequences (e.g., *plurality* of sequences) are generated from the first (e.g., entire) portion of a time series data set.

Additionally, although Boerner does indicate that multiple sets of 30 data points are extracted to perform the slope calculation discussed above, the reference is clear that *each*

respective set of 30 data points is extracted from a respective *single* time series data set. In other words, where multiple time series data sets are provided, Boerner clearly states that only a single sequence (e.g., a set of M_1 data points) is determined from each time series data set. This is in clear contrast to the presently recited subject matter, which requires that a *plurality of sequences* is generated from a first portion of a *single* data stream. Therefore, based on either of the possible interpretations set forth above, Applicants respectfully submit that Boerner fails to teach or suggest generating a *plurality of sequences* from a first portion of a data stream, as generally recited by each of independent claims 1, 15, 22, 25, and 27.

> **2.** **Boerner fails to teach or suggest determining a sensitivity parameter based on the plurality of sequences, as recited by independent claims 1, 22, 25, and 27.**

Independent claims 1, 22, 25, and 27 each generally recite the determination of a sensitivity parameter based on the plurality of sequences. For instance, independent claim 1 recites "training a detector by *determining a value for a sensitivity parameter using the plurality of sequences*." (Emphasis added). Independent claim 22 recites "a trainer configured to generate a plurality of sequences from a first portion of a data stream and further configured to *determine one or more sensitivity parameters based on the sequences*." (Emphasis added). Independent claim 25 recites a computer-readable medium comprising computer instructions for "*determining a sensitivity parameter using the plurality of sequences* … and training a detector to detect an interesting event in the data stream using the sensitivity parameter." (Emphasis added). Independent claim 27 recites "means for *determining a sensitivity parameter based on the plurality of sequences*." (Emphasis added). In other words, each of independent claims 1, 22, 25, and 27 would require that the plurality of sequences (e.g., generated from a first portion of a data stream, as discussed above) is used to determine a sensitivity parameter.

Applicants respectfully submit that Boerner also fails to teach or suggest this feature. In setting forth the present rejection, the Examiner cited Fig. 1 and paragraph 18 of Boerner as disclosing the determination of a sensitivity parameter based upon a plurality of sequences

generated from a first portion of a data stream. With regard to paragraph 18, Applicants note that this paragraph states:

> [0018] One of the outputs of this process is a set of normalized deviations from the dynamic trend. This time series oscillates between positive and negative values and could be used with thresholds as a trading indicator.

> Boerner, paragraph 18.

After reviewing this passage, it appears that the Examiner may have intended for the disclosed "thresholds" to constitute the recited "sensitivity parameters." However, even if such a correlation is proper, Applicants submit that the present claims not only require the determination of a "sensitivity parameter," but also require that the sensitivity parameter is determined *using the plurality of sequences* discussed above. With this in mind, Applicants are unable to locate any teaching in the cited passage or elsewhere disclosing that the "thresholds" are determined based on a plurality of sequences, as recited by claims 1, 15, 22, and 27. Indeed, Applicants note that this single cited passage is provided in the "Summary of the Invention" section of Boerner and is the *only* passage in the reference which even mentions the use of thresholds. Further, as discussed above, Applicants do not believe that any reasonable interpretation of Boerner teaches the generation of a plurality of sequences using a first portion of a data stream, as recited by each of the independent claims. Thus, Applicants are unable to ascertain as to how the Examiner has interpreted the reference to conclude that the "thresholds" briefly mentioned in paragraph 18 are generated from a plurality of sequences.

Additionally, as noted above, the Examiner further cited to Fig. 1 of Boerner in support of the present rejection. However, based on the Examiner's failure to provide any sort of explanation in the Office Action, it is unclear as to what precise elements in Fig. 1 the Examiner believes discloses sensitivity parameters. After reviewing the cited figure, Applicants note that Fig. 1 appears to mention the use of "trend determination parameters." However, after reviewing the reference, it does not appear that the disclosed trend determination parameters are derived or determined from a *plurality of sequences* generated from a first portion of a data stream. As

discussed above, the passages cited by the Examiner in the present rejection fail to even disclose the generation of a plurality of sequences. Thus, Applicants do not believe Boerner can reasonably be interpreted as teaching or suggesting the determination of sensitivity parameters using a plurality of sequences generated from a first portion of a data stream, as recited by independent claims 1, 22, 25, and 27.

3.   **Boerner fails to teach or suggest a testing a second portion of a data stream using a trained detector, as recited by independent claim 15.**

Independent claim 15 recites "testing a *second portion* of the data stream using the trained detector." (Emphasis added). Applicants respectfully submit that Boerner cannot be reasonably construed as disclosing the testing of a second portion of the above-discussed time series data set using a trained detector. As discussed above, the Examiner made no specific comments regarding the features uniquely recited in any of the independent claims other than those common to independent claim 1. Thus, because independent claim 15 recites "testing a second portion," and at least this unique feature was not addressed in the Examiner's rejection of independent claim 1, Applicants believe that this feature is also missing from Boerner.

4.   **Request withdrawal of the rejections of independent claims 1, 15, 22, 25, and 27 under Section 102(b).**

In view of the numerous deficiencies set forth above, Applicants submit that Boerner cannot reasonably be construed as anticipating independent claims 1, 15, 22, 25 and 27, or those claims dependent thereon. Accordingly, Applicants respectfully request withdrawal of the Examiner's rejections under 35 U.S.C. § 102(b) in view of Boerner and allowance of independent claims 1, 15, 22, 25, and 27.

Remaining Dependent Claims Rejected in view of Boerner under Section 102(b)

With regard each of the remaining dependent claims 2-12, 14, 16-21, 23, 26, and 28-30, each of which depends from one of the independent claims addressed above, Applicants note that the Examiner rejected these claims in the same manner as the independent claims discussed

above. That is, the Examiner has merely quoted the text of each dependent claim and provided a vague citation to various paragraphs and figures without providing any explanation whatsoever as to how the Examiner has interpreted Boerner in view of the subject matter recited by these dependent claims. As discussed above, however, independent claims 1, 15, 22, 25, and 27 are believed to be allowable over Boerner. Thus, each of the dependent claims rejected under Section 102(b) in view of Boerner are believed to be allowable at least by virtue of their dependencies from one of the above-discussed independent claims.

Further, while Applicants strongly believe these dependent claims would also be allowable for the subject matter separately recited, given the complexity of the cited reference and the Examiner's failure to provide any interpretational explanations with regard to the rejections, Applicants have chosen not to discuss the deficiencies of Boerner with regard to the separately recited subject matter of dependent claims 2-12, 14, 16-21, 23, 26, and 28-30 at this time. However, should the Examiner choose to issue a proper rejection in the future communication that fully explains the application of Boerner to the pending claims, Applicants reserve the right to point out these deficiencies in a future response.

Claim Rejections Under 35 U.S.C. § 103

In the Office Action, the Examiner rejected claims 13 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Boerner in view of Cox et al., U.S. Patent No. 5,734,592 ("Cox"). Applicants respectfully traverse these rejections.

Legal Precedent

The burden of establishing a *prima facie* case of obviousness falls on the Examiner. *Ex parte Wolters and Kuypers*, 214 U.S.P.Q. 735 (B.P.A.I. 1979). To establish a *prima facie* case, the Examiner must not only show that the combination includes *all* of the claimed elements, but also a convincing line of reason as to why one of ordinary skill in the art would have found the claimed invention to have been obvious in light of the teachings of the references. *Ex parte Clapp*, 227 U.S.P.Q. 972 (B.P.A.I. 1985). In establishing a *prima facie*

case for obviousness, "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined." *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727 at 1729 (2007).

Deficiencies of the Rejection

Applicants respectfully assert that the Examiner has not established a *prima facie* case of obviousness with regard to claims 13 and 24, which depend from claims 1 and 22, respectively. As stated above, the Examiner rejected claims 13 and 24 as being obvious over Boerner in view of Cox. However, as discussed above, Boerner clearly does not disclose those claim features attributed to it by the Examiner. Moreover, Applicants note that the Examiner relied on Cox solely for the teaching that cost variables may be used in determining sensitivity parameters. *See* Office Action, page 5. However, this reliance alone fails to obviate the deficiencies of Boerner.

In view of these deficiencies, among others, Applicants respectfully submit that the Examiner's Section 103 rejections of claims 13 and 24, which are based upon the Examiner's erroneous interpretation of Boerner, cannot establish a *prima facie* case of obviousness. As such, Applicants believe claims 13 and 24 are clearly allowable at least by virtue of their dependency from independent claims 1 and 22, respectively. Accordingly, Applicants respectfully request withdrawal of the Section 103 rejections of claims 13 and 24.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 1 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. *See* Office Action, page 2. Applicants respectfully traverse this rejection.

Legal Precedent

The Examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph, is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available. *See* M.P.E.P. § 2173.02. Although the Examiner may take exception to the terms used in the claims, the patentee may be his own lexicographer. *Ellipse Corp. v. Ford Motor Co.,* 171 U.S.P.Q. 513 (7th Cir. 1971), *aff'd.* 613 F.2d 775 (7th Cir. 1979), *cert. denied,* 446 U.S. 939 (1980). The Applicant may use functional language, alternative expressions, negative limitations, or any style of expression or format of claim which makes clear the boundaries of the subject matter for which protection is sought. *See* M.P.E.P. §§ 2173.01 and 2173.05; *In re Swinehart,* 439 F.2d 10, 160 U.S.P.Q. 226, (CCPA 1971). The Examiner is also reminded not to equate breadth of a claim with indefiniteness. *In re Miller,* 441 F.2d 689, 169 U.S.P.Q 597 (CCPA 1971).

The essential inquiry pertaining to the definiteness requirement is whether the claims set out and circumscribe a particular subject matter with a reasonable degree of clarity and particularity. *See* M.P.E.P. § 2173.02. As set forth in Section 2173 of the Manual of Patent Examining Procedure, definiteness of claim language must be analyzed, not in a vacuum, but in light of:

    (A)   The content of the particular application disclosure;

    (B)   The teachings of the prior art; and

    (C)   The claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent art at the time the invention was made.

In reviewing a claim for compliance with 35 U.S.C. 112, second paragraph, the examiner must consider the claim as a whole to determine whether the claim apprises one of ordinary skill in the art of its scope and, therefore, serves the notice function required by 35 U.S.C. 112, second paragraph, by providing clear warning to others as to what constitutes infringement of the patent.

See Solomon v. Kimberly-Clark Corp., 216 F.3d 1372, 1379, 55 U.S.P.Q.2d 1279, 1283 (Fed.
Cir. 2000). Only when a claim remains insolubly ambiguous without a discernible meaning after
all reasonable attempts at construction must a court declare it indefinite. *See Metabolite Labs.,
Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1366, 71 U.S.P.Q.2d 1081, 1089 (Fed. Cir.
2004). Accordingly, a claim term that is not used or defined in the specification is not indefinite
if the meaning of the claim term is discernible. *See Bancorp Services, L.L.C. v. Hartford Life
Ins. Co.*, 359 F.3d 1367, 1372, 69 U.S.P.Q.2d 1996, 1999-2000 (Fed. Cir. 2004).

Deficiencies of the Rejection

As a preliminary note, Applicants note that these rejections were not made in *any* of the
previous Office Actions regarding the present case. Applicants respectfully submit that while
these rejections are without merit, as discussed further below, the late-nature of these particular
rejections is fallacious and only serves to frustrate and unnecessarily protract the prosecution of
the present application. Accordingly, Applicants respectfully remind the Examiner of his duties
and obligations under 37 C.F.R. § 1.104 and MEP § 707.07 to provide actions which are <u>complete
as to all matters</u>.

In setting forth the present rejection, the Examiner specifically stated:

Claims 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite
for failing to particularly point out and distinctly claim the subject matter which
applicant regards as the invention. Applicant claims, "training a detector by
determining a value for a sensitivity parameter using the plurality of sequences."
Applicant fails to describe the purpose or use of determining a value in the claim.

Office Action, page 2.

In other words, it appears that the Examiner is rejecting claim 1 as failing to particularly recite a
purpose for the determined sensitivity parameter. In view of the legal precedent set forth above,
Applicants are unable to ascertain as to what grounds the Examiner believes this rejection is
proper under Section 112, second paragraph.

With regard to the determined sensitivity parameter value, the claim clearly sets forth that the sensitivity parameter is <u>used to train a detector</u>. Indeed, as acknowledged by the Examiner in the previous Office Action mailed 12/18/2007, "training a detector" constitutes setting the detector to detect. Thus, given the plain language of the claims, Applicants assert that one skilled in the art will readily appreciate that the <u>use</u> of determining the sensitivity parameter is to train a detector to detect an event based upon the sensitivity parameter. Accordingly, Applicants respectfully request withdrawal of the present rejection, as it is believed that independent claim 1 is fully compliant with Section 112, second paragraph.

Claim Rejections Under 35 U.S.C. § 101

The Examiner further rejected claims 1-14 under 35 U.S.C. § 101 as being directed towards non-statutory subject matter. In particular, the Examiner noted that these claims are useful and concrete, but asserted that the claims fail to produce a tangible result. Office Action, page 2. Applicants respectfully traverse these rejections.

Legal Precedent

The Supreme Court has observed that Congress intended Section 101 to include "anything under the sun that is made by man." *Diamond v. Chakrabarty*, 447 U.S. 303, 308-9, 206 U.S.P.Q. 193, 197 (1980). There are, however, qualifications to the apparent sweep of this statement. Excluded from patentability are subject matter in the categories of "laws of nature, natural phenomena and abstract ideas." *Diamond v. Diehr*, 450 U.S. 175, 185, 209 U.S.P.Q. 1, 7 (1981). However, other than these specific exceptions, nearly anything man made is statutorily patentable subject matter under Section 101.

The Federal Circuit has developed a test which may be used to determine if a claim recites statutory subject matter, namely does the claim produce a "*useful, concrete, and tangible result.*" *In re Alappat*, 31 U.S.P.Q.2d 1545, 1557 (Fed. Cir. 1994) (*en banc*) (emphasis added). The Federal Circuit elaborated on this test by holding that one must look to "the essential

characteristics of the subject matter, in particular, its *practical utility*." *State Street Bank & Trust Co. v. Signature Fin. Group Inc.*, 47 U.S.P.Q.2d 1596, 1602 (Fed. Cir. 1998) (emphasis added). Further, in explaining the "useful, concrete, and tangible" test, the Federal Circuit has stated "the dispositive inquiry is whether the claim *as a whole* is directed to statutory subject matter." *In re Alappat*, 31 U.S.P.Q.2d at 1557 (Fed. Cir. 1994) (emphasis added). Indeed, there has been no requirement from Congress, the Supreme Court, or the Federal Circuit mandating that a *specific final result* be shown for a claim to qualify under 35 U.S.C. § 101. *See id.* Rather, the Federal Circuit has specifically stated "the *Alappat* inquiry simply requires an examination of the contested claims to see if the claimed subject matter *as a whole* is a disembodied mathematical concept representing nothing more than a 'law of nature' or an 'abstract idea,' or if the mathematical concept has been reduced to *some practical application rendering it 'useful.'*" *AT&T Corp. v. Excel Communications, Inc.*, 50 U.S.P.Q.2d 1447, 1451 (Fed. Cir. 1999) (emphasis added). Therefore, if a claim, read as a whole and in light of the specification, produces any useful, concrete, and tangible result, the claim meets the statutory requirements of 35 U.S.C. § 101. *See id.*

In rejecting the present claims under 35 U.S.C. § 101, the Examiner relied heavily on *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*, 22 U.S.P.Q.2d 1033 (Fed. Cir. 1992). The patent at issue before the Federal Circuit in *Arrhythmia* claimed a method for analyzing electrocardiograph signals to determine the presence or absence of a predetermined level of high-frequency energy in the late QRS signal. *See id.* at 1038. However, the court ultimately held that while the final output of the claimed process was a numerical result, such did not preclude patentability because the number was "not a mathematical abstraction; it [was] a measure in microvolts of a specified heart activity." *Id.* The court also embraced the view that *the tangibility requirement does not preclude electrical signals*. *See id.*

The Federal Circuit has further explored issues regarding manipulation of data in the form of electrical signals. In *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 47 U.S.P.Q.2d 1596, 1601 (Fed. Cir. 1998), *cert denied*, 525 U.S. 1093 (1999), the patent

at issue claimed a process for administrating and accounting mutual funds. The Federal Circuit held that the "transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a *useful, concrete, and tangible result* – a final share price momentarily fixed for recording and reporting purposes." *Id.* (emphasis added).

Deficiencies of the Rejection

Referring back to the Section 112 rejections discussed above, Applicants note that the present Section 101 rejections also <u>were not</u> made in *any* of the previous Office Actions regarding the present case, and that the late nature of these new rejections serves to frustrate and unnecessarily hinder the prosecution of the present application. Regardless, Applicants believe that the present rejections under Section 101 are also without merit.

In the present rejection, the Examiner specifically asserted that "[m]erely determining a value for a sensitivity parameter is not sufficient to constitute a tangible result." With regard to these assertions, Applicants respectfully submit that the Examiner has failed to fully appreciate and consider as a whole *all* the steps of the recited method of independent claim 1, which recites:

> 1.   A processor-based method comprising:
>
> receiving a data stream comprising a plurality of temporally ordered data points;
>
> generating a plurality of sequences from a first portion of the data stream; and
>
> <u>training a detector by determining a value for a sensitivity parameter using the plurality of sequences</u>.

(Emphasis added).

Thus, contrary to the Examiner's assertions, Applicants respectfully submit that the tangible result from performing the recited method of claim 1 is not the sensitivity parameter value, but the underlined trained detector, which is trained to detect an event *based* on the sensitivity parameter value. Indeed, as noted above, the Examiner has previously acknowledged that "training a detector" constitutes setting a detector to detect. Further, as clearly described in the specification, a trained detector may utilize a threshold (e.g., sensitivity parameter) to detect the occurrence of an event, such as a change in a data stream. *See* Application, paragraph 17. The trained detector may be applicable in detecting changes in a number of different types of data streams, including those associated with a city traffic system, the engine of a car, patient data in a hospital, or even changes in a stock market or a citation index, for example. *See id.* at paragraph 20.

For at least these reasons, Applicants respectfully submit that resulting trained detector recited by independent claim 1 *clearly* constitutes a tangible result. Accordingly, Applicants respectfully request withdrawal of the rejection of claims 1-14 under 35 U.S.C. § 101.

Presently Submitted Claim Amendments

As set forth above, dependent claim 3 is amended by the present Response. Applicants submit that the present amendments were not made in order to address the Examiner's rejections, but were made in order to include subject matter that was unintentionally omitted in dependent claim 3, as originally filed. Specifically, the third paragraph of dependent claim 3, which previously recited "signaling detection," is amended to recite "signaling detection *of an interesting event in the data stream if the score crosses the sensitivity parameter*." (Emphasis added). Applicants note that the subject matter recited by dependent claim 3, as amended, is similar to the subject matter recited by dependent claim 26. Accordingly, Applicants respectfully request entry of the present amendments to dependent claim 3.

Conclusion

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: September 19, 2008

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